



MAGAZINE

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FRONT COVER: "Autumn," by W. H. Wilson (General Chemicals Division)

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The Fight Against Disease

By Cedric Jagger

Thanks to modern research, the maladies of their control. Already the sting has been malaria, leprosy and venereal disease. Now, to its armoury in the shape of the most adva

mankind are slowly yielding up the secrets taken out of such diseases as pneumonia, at heavy cost, I.C.I. has added a new weapon nced laboratories of their kind in the world.

Colour illustration

by Denis Wreford

"DON'T want to die yet!" A pitiful cry at any time, and especially so in the young and middle-aged. It is only natural, therefore, that today a tremendous amount of scientific research is devoted to averting this threat of premature death from disease, and with some success too.

Our expectation of life has increased enormously over the past century, and perhaps even more spectacularly during the last twenty years. This is due not to any new-found ability of our bodies to last longer by wearing better, but mainly to the effective control by modern drugs of many of the infectious diseases which previously took a heavy and premature toll of human life. Such drugs as these are not of course discovered by chance—at least, hardly ever. They are most often the result of years of experiment—or of enlightened trial and error—by highly skilled scientists.

I.C.I.'s experience in this field dates back exactly twenty-one years, for it was in 1936 that the Dyestuffs Division first decided to embark on systematic pharmaceutical research. Results to date speak for themselves in such well-known names, to the doctor and the veterinary surgeon, as 'Paludrine,' 'Antrycide,' 'Mysoline,' and a host of others. Encouraged by these successes, I.C.I. has now invested even more deeply in research by adding to its existing sources laboratories at Alderley Park which are the most advanced of their kind in the world.

Alderley Park, close to Manchester, extends to some 350 acres. The laboratories themselves only occupy a small part of this, leaving plenty of land on which to graze farm animals, whose diseases are by no means of secondary importance as a research target. There is

good communication both by road and by rail. The landscape is superb, including fine woodland and a magnificent view over Radnor Mere, where wild birds abound—most desirable surroundings for privacy and the restful, unhurried atmosphere in which research is best carried out.

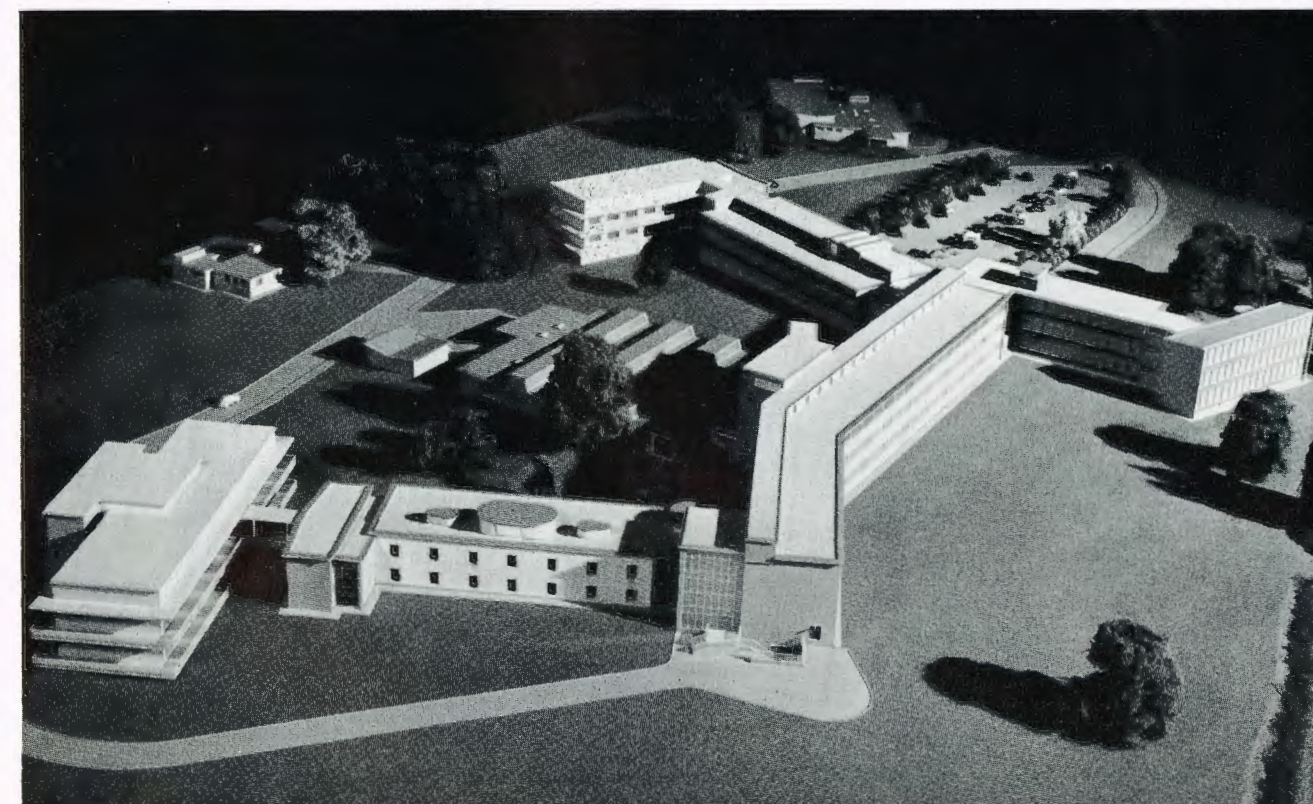
What sort of thinking has gone into the creation of

expensive new buildings and equipment of a highly specialised type, and what is it hoped to achieve with them?

The main point can be put quite simply. It is that the whole pace of biological research—its very output, in fact—depends on the ability to conduct tests under properly controlled conditions. With tests involving animals this is remarkably difficult to achieve.

The small laboratory animal—generally a rat or a mouse—is to the biologist what the test tube is to the chemist. In it a specified disease can be simulated and the efficacy of new types of drugs in controlling the disease can be measured. For many years research effort both in this country and abroad has been bedevilled by the common infections inevitably found in commercial stocks of laboratory animals. In tests often lasting for months rather than for days, so many animals suffer or die from their own natural infectious diseases that many costly experiments in terms of the salaries of highly skilled staff, laboratory facilities, and so on, are just wasted.

When the Animal Breeding Unit was first planned in 1947 it represented the most advanced thinking anywhere in the field of biological research, and indeed is



Scale model of the new laboratories. Extreme right is the laboratory and office block, and right centre is the chemical block. The three wings (reading from front to back) are respectively for infectious diseases, wash-up and storage, and non-infectious diseases.

LAYOUT OF ALDERLEY PARK RESEARCH LABORATORIES. Each research and shows the flow Synthesis Laboratories through animals under strictly control

KEY PARK RESEARCH colour indicates the type of work from the Chemical through to the testing on small led conditions.

- A Non-infectious Diseases Animal House
- B Biological Research Laboratories
- C Administration and Library
- D Chemical Research Laboratories
- E High Pressure Laboratories
- F Toxic Chemical Laboratories
- G Virus, Bacterial and Fungal Laboratories
- H Staff Decontamination
- J Infectious Diseases Animal House (Red and Blue—Infectious to Man) (White—Pre-infection)
- K Glass Washing and Sterilising
- L Media Preparation and Sterilising
- M Laboratory Stores
- RED LINE** shows flow of infectious glassware
- BLUE LINE** shows flow of non-infectious glassware



still in advance of more than a few relatively small-scale buildings in the United States. Briefly, the idea is that by taking animals by Caesarean section (that is by "sterile birth"), and then by raising them artificially, the mothers and fathers of the future breeding stock can be obtained free from their natural disease; the physical arrangements of the Breeding Unit are designed to maintain this freedom for all time.

Disease-free Breeding

Let us deal first then with the Animal Breeding Unit. This is situated in a 10-acre glade in the woods, remote from all the other buildings. Rabbits and any larger animals are excluded by a continuous fence, broken only by a system of double gates. Everything that enters or leaves the three-storey building itself must first pass through a rigid routine of decontamination or sterilisation, so that there can be no possibility of the entry of disease.

Staff must pass from changing and decontamination rooms through a disinfectant trough, above which the air is irradiated with ultra-violet light and insects are killed by an insecticidal spray. The entry of equipment and the issue of animals takes place by another route, through a system of large autoclaves. These are horizontal drum-shaped steel compartments, similar to those commonly used in hospitals, which can be quickly and conveniently sterilised by steam under pressure. At each end of the drum there is a door, and a special device guards against both doors ever being open at the same time. Thus it is possible to maintain an aseptic "lock" between the breeding house and the outside world.

Automatic Feeding

The animal breeding rooms themselves have no windows and no natural ventilation. An air-conditioning plant changes the air ten times an hour. The animals live in cages with open wire mesh bottoms above sloping sheets of glass which can be automatically flushed with water, and the provision of drinking water is also automatic to avoid manhandling over 45 tons of water and glass bottles a week!

On the top storey food is prepared, pasteurised, supplemented with vitamins and processed into cubes, in quantities sufficient not only for the breeding unit but for the experimental animal houses also. The food goes to the breeding rooms via steel tubes; that destined for the experimental houses is issued through the double-ended autoclaves.

When in full production, the annual turnover of the breeding house is expected to be of the order of 100,000 rats and 250,000 or more mice a year.

The next step is to maintain these animals free of any but laboratory-controlled experimentally induced disease.

To this end the two experimental animal houses possess several features in common. Ordinary corridor access to rooms would provide far too great a risk of cross-infection, and therefore open-air balconies are used instead. These are screened against birds and equipped with vermin barriers at strategic points to ensure security against wild rodents. The temperature in each room housing animals is independently controlled—the range normally being between 65° and 75° F.—and an air-conditioning system operates similar to that in the breeding house.

Isolated Infection

Look now particularly at the infectious diseases animal house. This contains two floors, which are self-contained and completely isolated from each other. Separate loading platforms give access to each one, and even service pipes are sealed off. The first floor contains three areas, coloured white, red and blue. In the white area, which contains drug preparation rooms and food and cage stores, animals from the breeding houses are held during the pre-infection period. In the red and blue areas, which are similar to each other in make-up, animals are infected with micro-organisms dangerous to man. The provision of two such areas, of course, allows two different infections to be studied at the same time.

It is obvious that the work undertaken in the red and blue areas is potentially dangerous to the staff carrying it out, and special equipment and discipline are needed to prevent any possibility of accidental infection. Both research staff and animal attendants must pass through clothes-changing routines and showers in decontamination locks on entering or leaving the floor.

In the work areas the principle employed can be summed up in one word—containment. Infected animals live in cages in artificially ventilated cupboards, and animal manipulations are carried out in ventilated manipulation hoods—large glass-fronted boxes—the operator usually using "built-in" gloves. The hoods and cupboards are so designed that the air flow is always away from the operator, no matter what he is doing, and a relatively high rate of air change is achieved, without either draught or turbulence. All

the air leaving these areas is bacteriologically filtered.

And now for the ground floor. This houses animals infected with virus diseases such as poliomyelitis and influenza; but these diseases in animals are not dangerous to man and therefore "containment" is not attempted, simply because virus diseases dangerous to man would always be handled in the red and blue areas of the floor above. Instead, a colour code system is used to emphasise discipline and prevent cross-infection. Each of the six animal rooms is given a colour, to which everything used in that room—pails, equipment, even overalls—must correspond. The colours must never, under any circumstances, become mixed—say, a yellow pail in the green room, or people in green in the yellow room.

The other animal house caters for non-dangerous infections, and serves the laboratories dealing with pharmacology, physiology, parasitology and pathology. In addition to housing disease-free rats and mice, rooms have been adapted for special studies with snails and mosquitoes.

So much for the animal houses, which, after all, are the focal points on which much of the future success of these laboratories must depend. The laboratories themselves are broadly divided between chemical and biological studies.

The chemical laboratories—mainly concerned with the synthesis of organic chemical substances—do not



Sterilised glassware plays an essential role in biological research. Here a glass tube is being plugged before sterilisation in such intense heat that all germs inside the tube are killed.

differ greatly from those, for instance, in the Dyestuffs Division at Blackley. Indeed, whether the "end products"—for want of a better word—are drugs, dyestuffs or even some types of plastics materials, the general laboratory arrangement is fairly standard. At Alderley Park, however, there are some "extras." Certain studies needing a high degree of instrumentation have been specially provided for, as have abnormally hazardous operations—for example,

(Continued on page 357)

Apprentice Instructor

FIVE years ago Brian Byrne was a boilermaker in General Chemicals' Pilkington-Sullivan Works. Now he is an apprentice training instructor in the Division's training school at the same works.

All the Division's apprentices spend their first three months in the school. During this time Brian Byrne lectures on engineering metals and elementary engineering drawing. After this, the engineering apprentices remain on for a further four months in the school, and Brian Byrne's own particular pupils are the potential boiler-makers, welders, wagon repairers and blacksmiths, who also come to him for two weeks each year during the rest of their apprenticeships.

The practical instruction which he gives in the shop is very varied indeed and includes gas and electric arc welding—not only of mild steel but of stainless steel, cast iron, aluminium and copper. Blacksmiths and wagon repairers must be taught how to use the forge and boiler-makers how to bend, roll, rivet and caulk platework.

"How do you set about correcting their work?" I asked.

"Well," he said, "at first it's all a question of pointing out errors and faulty workmanship. But as the boys progress I like to get them to tell me what *they* think is wrong with their work."

"Don't they all think their work is good?" I asked.

"Here's how I do it," he told me. "I inspect the finished job, then I ask the boy if *he's* satisfied with it. The boys know that ultimately *I* have to be satisfied, so they look at their work with an eye as critical as they think mine will be! On the whole I find they develop an ability to see their own mistakes for themselves. And they learn faster that way."

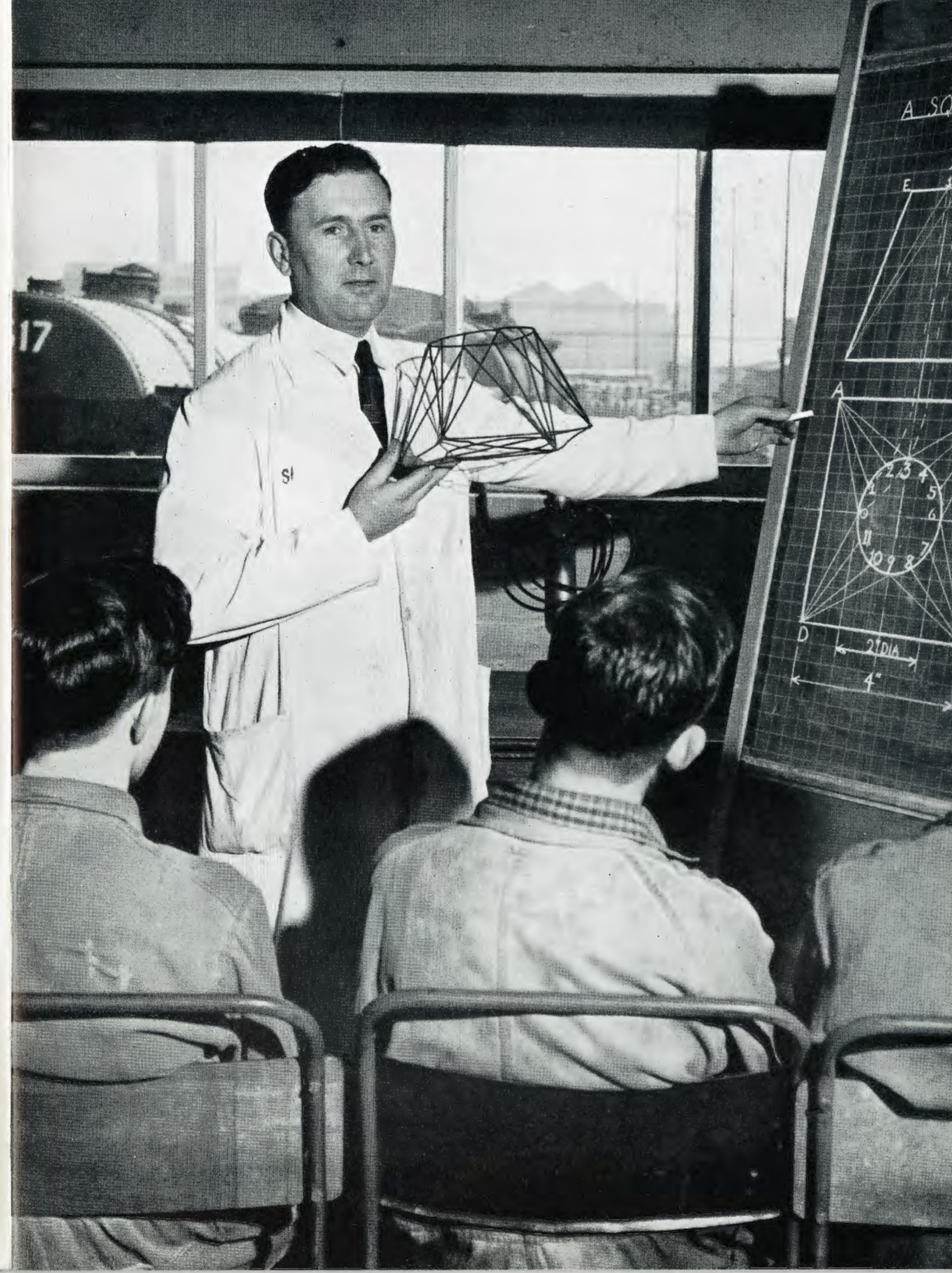
But all the practical work is not done in the workshop. Brian Byrne spends some of his time showing apprentices

how to develop flat sheets into the complicated shapes they will have to make in their trade. This is done, in the first place, on the drawing board. If, for instance, a man is asked to make a template for a 3 in. pipe to fit into a 10 in. main at an angle of 65 degrees, he is obviously not expected to hack away in a hit-or-miss fashion till the pipes fit. The correct shape to which the flat sheet must be cut for making this template is first drawn out in accordance with geometrical principles.

"Is this the only way?" I said to Brian Byrne. "You've been a tradesman—you must know lots of short cuts in the job. Take these two pipes, for instance: is there a quick way of marking them off without actually drawing it?" "Oh yes," he said. "The experienced tradesman knows all kinds of tricks of the trade, and of course I do tell the boys some of them. We're turning out real tradesmen here—who know the short cuts for use in emergencies, the more accurate method."

He has to be a bit of a welfare officer in addition to his other duties. The boys spend so much of their time with him that they tend to consult him on all sorts of matters—national service, unsatisfactory "digs," personal problems. During his connection with the school sixty boilermaker and welding apprentices have gone through his hands. He gets a certain pleasure from the fact that one of his present pupils is the son of a tradesman who taught Brian Byrne himself at night school back in 1937.

"Do you think we are getting better apprentices today, with all the modern facilities for training?" I asked him. He told me—and stressed that it was simply his own opinion—that he thought they were about two years ahead today, that a second-year apprentice of 1957 could undertake the work of 1937's fourth-year boy. L.D.M.



Brian Byrne

THE PROBLEM OF INFLATION

By S. P. Chambers

We all know that inflation is an evil. But all are not agreed on how best to keep this evil in check. Here Mr. S. P. Chambers, a Deputy Chairman of I.C.I. and an acknowledged authority on finance, contributes some wise observations on this problem.

Reprinted by courtesy of the Financial Times

THE events of the past few months, now that the effects of the Suez crisis are being forgotten, leave us all in no doubt that if wages and prices continue to increase at their present rate we shall suffer all the evils of serious inflation.

The present reaction in industry is one of buoyancy and optimism, but continued inflation will see us priced out of important export markets unless the pound is further devalued. It will also mean a substantial rise in Government expenditure when the real and growing hardships of pensioners and others who live on fixed incomes, or who require Government assistance of one kind or another, can no longer be postponed, and when increased wages put up Government expenditure before inflation itself yields more tax money at the same rates.

One of the most insidious and most neglected effects of inflation on industry is that much of the apparent profitability is unreal and true profit margins become too small. Real costs, including the cost of replacing both fixed assets and working capital, rise, but this increase in costs is never provided for—either adequately or soon enough. Profit margins which in money terms seem high and are attacked by the ignorant or the malicious are, during an inflationary rise in prices, frequently inadequate for the maintenance of real capital and for the financing of that minimum rate of progress and development without which British industry would fall behind in technical efficiency and in competitive costs.

Favourable Factors

Just now, however, many factors appear to be favourable, and these make warnings about inflation seem unnecessarily alarmist.

In 1957 so far, British exports are at an all-time record level both in value and in volume. British exports exceed those of Western Germany and are also higher per head of population.

Total production and real standards of living for the working population are higher than ever before. If we

take as the ultimate aim of economic policy the improvement of living standards while maintaining a high level of employment, there can be no doubt that the policy of the past few years has so far been most successful.

Even on the financial front many factors appear to be favourable. The surplus on the Government finances in the first half of the calendar year is larger than it has been for many years.

Warning Notes

With so much that is right with our economy, what is wrong? First, there is the persistent increase in the note circulation itself. Then there is the fall in the market value of Government securities. There is also the weakness of the pound sterling. Government expenditure, though adequately covered by taxation, remains at a very high level. Finally, there is the continued rise in prices and wages.

These unfavourable factors could, if they persisted, reverse all the favourable trends in the other factors. In particular, they could lead to acute difficulties in export markets and a consequent balance of payments crisis, to inadequate investment in industry, to a large Government deficit, and ultimately to unemployment and falling living standards. Once a serious downward trend is under way it will be most difficult to reverse it, because adverse conditions of this kind tend to become cumulative and self-perpetuating. People do not take kindly to lower living standards, and if their real incomes fall they will save less; if less is saved, capital investment falls, and our competitive position gets still worse.

With the present full employment conditions, the trade unions could, for a time, exploit their position and get higher wages. By getting a larger proportion of the national product, those who get higher wages will get larger real incomes as well.

Nothing does the cause of sound policy more harm than loose talk to the effect that, as prices will rise just as much as wages, it is no good pressing for higher wages because the rise will be lost in higher prices. It is not all lost; before

prices go up to the same extent as wages some considerable increase in real income will be secured at the expense of other sections of the community, especially the fixed income receivers, such as pensioners. In the long run, however, if higher wages mean lost exports, and therefore lost production, it is true that everybody will suffer, including those who for a time enjoyed higher living standards from the increased wages.

A Precarious Balance

The answer to these problems does not lie in such a deflationary policy that large areas of unemployment emerge. The demand for labour should be kept in check sufficiently to prevent the sucking away of workers from key industries, such as mining and transport, and to give sufficient flexibility to make it possible for new enterprise to get its supply from those parts of industry which are, or ought to be, shrinking. This reduction from over-full employment to just full employment is quite different from severe deflation and large-scale unemployment which is by far the most wasteful use of the country's resources of manpower and capital.

The greatest danger is that, in conditions of very full employment, the political instinct to prevent strikes on a nation-wide scale may push the Government to allow unjustifiable wage claims in the nationalised industries. I do not think that this has happened yet. If it does, these nationalised industries will be forced by deficits to finance capital expenditure in a way which, in the absence of adequate savings, will be inflationary. The very political pressure which would give unjustifiable wage increases would prevent the raising of the prices of the products or services of nationalised industries to a corresponding extent. This, it must be emphasised, is a real danger in 1957; it is not yet a reality, and, politics apart, it need not be.

Helpful Checks

Government, as an employer, could thus force Government, as the ultimate monetary authority, along an inflationary road which it did not wish to follow.

There are, however, two favourable factors, both more important than they may appear at present.

The new policy on Defence will mean a much smaller charge on the budget in the long run. There is no immediate relief, and there may even be additional expenditure during the early months of transition. The immediate effect of the adoption of this new policy may be inflationary, but the long term will be anti-inflationary.

The other favourable factor is one that has generally been regarded as unfavourable. Several of the recent increases in wages and prices—especially in transport and

coal—will correct a long-standing lack of balance in relative wages and prices. This lack of balance has resulted in chronic losses of transport workers and miners to other occupations. Although the immediate impact may appear to be inflationary, the long-term effect of this correction will be favourable, provided it is not followed automatically by corresponding increases in other wages and prices where the increases could not be justified on the same grounds.

Coal is perhaps the most maligned product of all, and the recent price increases have been condemned vehemently by people who are utterly unaware of the facts or who refuse to admit them. Let it be repeated that productivity in British mines is higher than that in European mines, including those in Western Germany, and that British coal is cheaper, grade for grade, than Continental coal. The limit of nonsense is reached when the same people who advocate our joining a free trade area with Continental Europe also condemn the rise in the price of British coal. Do they realise that joining a free trade area—which I personally believe to be desirable—means putting up the price of British coal to the European level? Unless this were done, much of the coal needed by British industry and by British homes would go to Continental Europe, where it is also needed and where it would command a higher price.

Union Responsibility

Putting up *certain* wages and prices aids the fight against inflation, and indiscriminate condemnation of all wage and price increases clouds the main issues and does a great public disservice. But if other wages and prices are weakly allowed to go up in step, the corrective value of these justifiable wage and price changes will be lost.

It is here that the trade union leaders have a serious responsibility. In some recent utterances there appears to be the hint of using an immensely powerful labour monopoly position, built up during full employment, to get an immediate advantage for members in wage advances which, in the long run, will harm those members.

Monopoly Power

The task of Government could be made politically impossible if trade union leaders attempted to cash in on their present powerful bargaining position and act in a way which would be much against the long-term interests of their members. In this matter their position is similar to that of a producer of a monopoly or near-monopoly product, who, if he is wise, will not exploit his position to get the maximum immediate profit but will take a long view, particularly in overseas markets, where monopoly conditions fade rapidly, and keep his profit margin adequate but moderate.

FIFTY YEARS AGO

By Henry Fern

Industry today is more civilised than it was fifty years ago. There are many things for the better which we now take for granted, as the author recalls looking back on a half-century of work with General Chemicals Division and its predecessors.

ON 22nd May 1907 I started work as an apprentice fitter and turner with the Cassel Cyanide Co. at Maryhill. I have been with that company (now incorporated into I.C.I.) ever since—more than fifty years in all.

As I look back, I cannot fail to be impressed by the mechanical changes throughout industry. But other factors, more intimately related to everyday life, seem to me no less revolutionary.

Labour departments and labour exchanges have lent some dignity to the once humiliating experience of seeking a job. I can recall the old ways, that so much resembled the slave market, when men stood outside factory gates from early morning, in all weathers, on the off-chance that a "gaffer" would come out seeking "hands." Such amenities as we enjoy in I.C.I. factories were quite unknown, and the workplaces were extremely crude and dingy.

My own introduction to industry was to a low, dark and narrow building with an earthen floor. Lathes and other machines crowded one another against the walls, and judging by modern standards it was a miracle that good and accurate work was possible with such primitive tools. The only lighting consisted of one gas jet to each machine or bench, and power was supplied by a noisy, stuttering steam engine.

The lighting arrangements afforded apprentices a mischievous way of getting even with journeymen who used the cruder methods of instruction and correction which were then common workshop practice. These apprentices would blow down gas jets in the adjoining building, thereby causing the workshop lights to splutter out and bringing production to a full stop. Refinements such as ambulance rooms, canteens or wash-basins were unknown, while the "usual offices" were at best perfunctory. However, our manager at that time, Mr. George Christison (known affectionately as "the big fellow"), was progressive for his time, and for many years before our transfer to Billingham



the Cassel Cyanide "black squad" were housed in an airy, well-lit and well-planned workshop.

I recall my reaction on first sight of the gigantic Billingham factory, when I imagined that in an undertaking so vast and impersonal the individual worker must be forever lost in the anonymity of a works number. I felt, I confess, a nostalgia for the compact little factory and the friendly, personal relations of Maryhill.

Experience has proved how wrong were those first impressions. I now know that no personal problem is too great or too little to merit the help that our understanding labour officers are ready to give. Facilities unheard of in my youth are at the service of all I.C.I. employees. Medical service, Friendly Society, Life Benefit, Pension Fund, Safety Department and profit-sharing are evidence of the

new relationship between employer and employed in our more enlightened age.

Although my service with the Company goes back fifty years, my personal interest is even older. My father worked for many years in what was nominally the parent company of our present Cassel Works. It was called the Cassel Gold Extracting Co., later to become the Cassel Cyanide Co., but known always to Maryhill folks as "the gold works."

This ambiguous title was a source of much misunderstanding and not a little leg-pulling. I still have a photograph of the original Cassel workers, taken about 1897, with my father in the centre of the front row looking as though he owned the place.

As I leave, my two sons, both fitters, carry on the family tradition.



How do they compare, the men of sixty years ago, with those of today? This photograph shows two out of the three shifts employed by the Cassel Gold Extracting Co. in 1897. The author's father sits with arms folded in the middle of the front row, "looking," says his son, "as though he owned the place."

Garden Notes

By Philip Harvey



PLANT pears for your heirs" is certainly a pleasing alliteration and, unlike some old sayings, is very largely true, as pears are exceptionally long-lived, possibly longer than any other fruit save the mulberry. Traces of the pear have been found in the Swiss lake dwellings of the late Stone Age, so they must be considered one of the oldest of all cultivated fruits.

Although pears are really no more particular in their soil requirements than apples, they must have plenty of sunshine. The ideal is a warm, deep, moisture-retaining soil. A wet clay is obviously unsuitable, but they often tolerate poor drainage rather better than many other fruits. Pears are usually more successful in the south of England than in the cooler north. The south of France seems to provide just the right conditions for this crop, which explains why some of the finest varieties, notably the peerless Doyenné du Comice, originated there.

If possible, choose a warm, sheltered spot when planting pears, as they blossom earlier than apples and are consequently more susceptible to damage by spring frosts. Late varieties like Glou Morceau, Doyenné du Comice and Winter Nelis crop better if grown against a south or south-west wall. Incidentally, the finest-flavoured pears are generally those planted against sunny walls, as the radiation of heat helps to "finish" the fruits.

Planting distances should be about 15 ft. apart, as for apples. Experts usually say 12-15 ft., but it is always best to err on the generous side. At all costs avoid deep planting. The correct depth can be readily ascertained by the soil mark on the main stem, which is the same depth as the tree was originally planted in the nursery, and if you

cover the graft or union there is the risk of scion rooting, which means excessively strong, unmanageable growth and a reluctance to fruit. (The scion is the portion of the grafted or budded plant which furnishes all the growth above ground.)

Yields of pears are generally lower than apples, but annual applications of bulky manures such as farmyard manure and compost will encourage more regular cropping. It is also helpful to give a dressing of nitrogenous fertilizer such as sulphate of ammonia or 'Nitro-Chalk' in February, as pears seem to enjoy more nitrogen than apples, although they can do with less potash.

How about varieties? The first point to remember is that the division between dessert and culinary pears is less rigid than between dessert and cooking apples. Most pears are, in fact, good cookers, provided they are gathered when still green. Doyenné du Comice, which is still supreme among the dessert varieties, is excellent when cooked. It is only fair to add that Cox's Orange Pippin is also a dual-purpose variety, although you would never assume this from reading the average nursery catalogue.

Perhaps we had better begin with Comice, as the commercial grower calls it. Although this variety often does tolerably well on heavy soils given sufficient warmth, it is decidedly unreliable and usually only crops regularly in certain districts. However, any gardener who only grows those plants which are easy and more or less foolproof is no gardener at all, so let me add that Comice is best planted against a wall. It must have a suitable pollinator such as Laxton's Superb or Winter Nelis. The fruits should be

gathered in early October, and here I must stress the importance of picking all pears at the right stage. If they are allowed to ripen on the tree they will often turn "sleepy." Early and mid-season varieties are harvested before the green turns to yellow. On the other hand, picking too early leads to shrivelling. Late varieties ought to hang on the trees as long as possible, although most of the fruits will be gathered by early November.

Pears ripen unevenly and should therefore be watched with an eagle eye after picking. They are ready to eat directly the flesh round the stem yields to slight pressure of one's thumb.

Williams' Bon Chrétien is the Bartlett pear of the canners. The musky flavour is not to my liking, but this is not always apparent and as Williams is both sweet and juicy it cannot be omitted from any list of recommended varieties. Many amateurs are eventually confronted with miserable, inedible specimens because they leave them too long on the tree. Williams should be picked when green at the end of August. Conference is a good pollinator.

Textbooks often advise planting Conference when there is only room for one pear, and they are perfectly right. It may not have quite the melting flavour of Comice but is far more dependable, being resistant to both scab and spring frosts. Conference is also self-fertile.

Other reliable pears include Laxton's Superb, excellent for bottling and ready at the end of August; Marie Louise, comes about a month later; and Bristol Cross, a new variety from the Long Ashton Research Station, is ready at the beginning of October.

Many enthusiastic amateurs apply heavy dressings of lime practically every year with the pious hope that lime will eventually help to banish wireworm, leatherjackets and other soil pests. Lime is neither a universal panacea for garden ills nor yet an all-purpose fertilizer, and a few general observations on its place in the garden may be helpful.

Most garden plants, including fruit trees, tend to give best results on slightly acid or neutral land, although many are perfectly happy on limy soils. For example, roses seem to prefer soil with a pH of about 6.5, which denotes a slight degree of acidity. Where lime is in short supply, weeds like sheep's sorrel, spurrey and bracken will flourish. Soils well supplied with lime will (other factors being equal) grow first-class beans, peas, cabbages and turnips. Lime should not, however, be applied before planting potatoes, as it tends to encourage scab.

The majority of herbaceous perennials are lime-tolerant, with the possible exception of lupins. Scabious positively revels in heavy dressings of lime—up to a bucketful per plant for a well-established specimen.

Lime has several important functions in the garden. It assists in bringing about the decomposition of organic matter, although continued applications without the addition of organic manures may ultimately lower fertility. It also helps to break down heavy land, especially seemingly intractable clays, and counteracts soil acidity. You will therefore appreciate the advisability of testing your soil by means of a BDH Soil Indicator before applying this material indiscriminately and possibly to no real purpose.



Russian Diary

By James Taylor

Under the title "Mission to Moscow" the author has already written about the official side of the I.C.I. mission to Russia last May. Here he gives glimpses of day-to-day life in Russia.

Colour photographs by members of the mission

BEFORE we left for Russia my younger son remarked to me that we would have a wonderful time eating caviare, drinking vodka and smoking black "drags." So it proved, but of course there was a lot more to it than that. I kept a diary of the trip, and here are some extracts.

Thursday, 16th May

We landed at Moscow Airport almost next to the Russian jet aircraft TU104, a graceful-looking ship. Our hosts were there to welcome us, with three large saloon cars (ZIMS), the hallmark of high official status. At the Metropole, one of Moscow's best hotels, I had been allocated a plush Victorian four-roomed suite. The dining-room and foyer had the same heavy Victorian look. Dancers, including Moscow "Teddy boys," gyrated to pre-war dance tunes in restrained movements only enlivened by a few daring impacts from the drummer.

Friday, 17th May

Visited the British Embassy in the morning. On the way I took some photographs of St. Basil's Cathedral and the Kremlin. I used the ciné camera frequently, but was never challenged.

At noon we went into conference with our hosts at the Sovietsky Hotel on our programme of visits. Afterwards they entertained us to lunch. Russian hospitality is munificent and massive; the cooking is

very good and the board literally does groan. Having eaten an enormous amount of caviare and bread and butter, smoked salmon, smoked sturgeon with horse-radish sauce, chicken salad and various oddments, one is somewhat taken aback to be served with a bowl of consommé containing a boiled egg, followed by a variety of other courses.

The mission was brave, but there were casualties.

The Russians have the pleasant habit of toasting—throughout the meal, particularly the early part. Glasses clink together all round and it's "bottoms up" for a glass of Vodka each time, unless it's a very minor toast, or a toast without words, when there's nothing more to say. At each place at the table are four or five glasses for madeira, dry white Georgian wine and red wine. On the left stands the largest glass of all, for mineral water—a pleasant hydrating device in a hard alcoholic world. At the end of the repast comes the pièce de résistance; pink Rostov-on-Don champagne in a tall glass and the staccato of the polythene stoppers from the high-pressure release of sweet champagne.

Later we strolled round Moscow. Then it struck us: there were no advertisements, no bright alluring posters and no garish petrol filling stations. We felt



Red Square, Moscow. On the left is part of the Kremlin, and in front of it the mausoleum where the bodies of Lenin and Stalin lie in state. The long queue of people waiting to enter the mausoleum is an everyday sight.

homesick, like slum children removed from the gutter. I doubt whether we liked it.

Thousands of Muscovites moved purposefully in the sunshine. A mile-long queue patiently filed along to the mausoleum of Lenin and Stalin, the people in their summer clothing, poorly cut, second-class fabrics, dull dyes. At the mausoleum entrance immobile sentries registered the passing of each hour as they changed guard. A few young women lent a touch of colour with their bright lipsticks. The red stars of the Kremlin Towers brooded over the Square.

In the evening we were guests at a performance at the Stanislavski Theatre of "Swan Lake." The choreography was faultless and the setting superb.

Saturday, 18th May

Bright and sunny. We toured the Kremlin and saw its museum of the Imperial Collection of coronation regalia and jewellery. The Kremlin is not a building, as many of us believed, but a walled city of many cathedrals and buildings. Mr. Bulganin and Mr. Krushchev do not live there, though Stalin did.

Sunday, 19th May

We visited the huge G.U.M. building in Red Square. Under one roof this houses large numbers of small shops, all, of course, State owned. Crowds everywhere, particularly around interesting items like Czechoslovakian hats or a good line in shoes. Prices of clothes and shoes were high—two or three times ours. Pots and pans and wireless sets, etc., seemed to be about the same price as ours. Most of the goods were poor by our standards.

The tale about special shops where only the privileged can buy seems to be untrue. In all the shops we looked at anyone could buy if they had the money. But clearly there was too much money chasing too few goods.

We had arranged to go with an Intourist party to the mausoleum. We lost the party on the journey, but made our own way to the front of the queue. The policemen and queue helped us to get right to the head with the other V.I.P.s and foreigners. This is a curious feature of Russian behaviour. They do not appear to resent privilege, and there seems to be a



very well understood system of priority and privilege based on functional position.

Lenin and Stalin are lying in state enclosed in cases of glass which give the illusion of seeing them in the open illuminated by a rosy light. At the head and foot of the dais stands a motionless guard.

We were taken to a football match at the Moscow Stadium, which seats about 100,000. A large picture of Lenin looked over the fine green turf (they only start football in May) and a brisk trade went on in ice cream cornets and other Russian delicacies. The match was between the Dynamos and the Locomotives. The rules are different from ours. There is no charging, no tackling the goalkeeper and no kicking him, even if he has fallen down. But it is possible to substitute players, up to two in a match. These rules and the good turf give a light resilient play with long accurate passing. The spectators do not shout; they whistle to express approbation or disapproval. Result: 4 to 1 for the Dynamos.

Monday, 20th May

At 8 a.m. we left by car for a factory about 60 miles from Moscow. After seeing the factory we visited the nearby factory town. The older blocks of flats were shabby, the new ones pretty good. The sports stadium and park were on a lavish scale, and in the Hall of Culture there were spacious rooms, a good lecture room and dance hall, billiards, etc.

Outside there was a great crowd of children and adults to greet us. The children especially looked well and decently dressed.

The factory had a holiday settlement, in a pleasant spot on the edge of the River Oka with a sandy beach for bathing and surrounded by oak and larch forest. Across the river you can see the old Russian town of Kashira and the line where the German tide was turned. The restaurant was set for supper: only one fork per person, but each place had its napkin and there seemed to be quite a good menu.



The new university building in Moscow is devoted to the scientific faculties. In the students' quarters 6000 men and women live in single rooms.

Tuesday, 21st May

By the ordinary Russian scheduled flight in a JLi4 to Rostov-on-Don. The local factory officials met us and gave us lunch at the airport hotel. An Intourist guide was to show us something of Rostov; an earnest little man, he was so anxious to be friendly and promote good relations that after a dozen toasts he had to be taken out.

The factory director, who presided at the lunch, really believed in eating and drinking, and

Moscow's biggest shop, the G.U.M. (State Universal Store), is actually a collection of shops housed under one roof. It is always packed with people.



Hotel rooms in Russia are usually heavily Victorian in style, like this one in Moscow

said so. It was a sort of gospel to him. As we left the airport hotel we had a premonition of things to come. We felt that there was to be rough stuff at Rostov.

The road to Belaya Kalitva goes through pleasant steppe country—the Cossack country—with very few trees. By the time we got to the guest house it was time for dinner.

The factory manager set a new high and the dinner was really formidable. Toast followed toast in quick succession and many an eye went glassy.

Wednesday, 22nd May

We had a look round Belaya Kalitva and were greeted by some friendly crowds. At the Institute

of Culture the Works Director had really let himself go, and the biggest banquet of our whole visit took place. An effort was made to get the Russians to dance Cossack dances. No one could do them, so one of our party obliged and crouched Cossack fashion, flinging his legs in the correct style from side to side. This brought shouts of approval from the Russians and was a credit to the English. But all good things come to an end, and around 10 p.m. we got into our cars and over the Steppes we went to Rostov.

Thursday, 23rd May

Left Rostov in the morning for Moscow and drank mugs of pink champagne in farewell to the factory director whose philosophy was "food."

Friday, 24th May

By chartered plane in the early morning from Moscow to Kirov in north-east Russia. The runway at Kirov was grassy and rather bumpy. There was a large reception of children and adults at the airport to greet us as we were received on the strip by the factory management.

Kirov is an industrial town far out in the country, but with the usual cultural halls and parks.

The local hotel was good for such a remote town. I was given a suite—sitting room, office, dining room, bedroom and bathroom. The water did not function in the bathroom, but I finally got a maid, who did not speak a word of English, to bring a jug of water. She poured it over my hands as if she were anointing me with oil. In fairness I must say the water was on when we returned in the evening. There had been a burst main. From the hotel we motored to the factory, and



A giant umbrella which provides its own rain shelters family parties in the Peterhof park near Leningrad. Once the palace of the Czars, the Peterhof was largely destroyed during the last war.

again we were welcomed by people waiting at the gate.

The return flight to Moscow was lively, as cognac and vodka had been taken aboard. I have never seen so much walking about in a plane or so much animated discussion. Twice the captain had to come aft to say he could not trim the ship as everyone was at the tail.

Arrived at Moscow at 11.30 p.m. It was cold and raining hard. In our thin summer suits we ran shivering across the tarmac.

Saturday, 25th May

We had asked to see the university and visit some of the departments. With characteristic competence, Intourist had laid it on. The university is an imposing building with flanking wings. It is in a magnificent

setting on the Lenin Hills. Below, the semicircle of the river, with the stadium and city beyond, present a wonderful panorama. Taken to the 24th floor, and along sumptuously carpeted corridors we were ushered into a magnificent conference room. Here the deputy rector of the university gave us a very clear description of the set-up of the university. We visited the students' quarters where some 6000 men and women are housed. Each has a separate room and two rooms form a unit with a small entrance lobby, bathroom and toilet. On each floor there is a well-fitted kitchen and a rest room.

In the chemistry department the Professor of Inorganic Chemistry received us cordially and showed us round.

The quality of the research and teaching laboratories

was good, and the lecture theatre we saw was extremely well fitted out.

We had arranged to give a dinner in the evening to our Russian hosts and we were naturally rather anxious about the success of the function. As it turned out, everything went well. We invited two of the Russian-speaking staff from the Embassy. To them it was an interesting and useful experience, because the opportunities for diplomatic staff to mix on free and easy terms with the Russians are few. One item on the menu was a savoury mixture, served in a very small saucepan, made up of small pieces of crab in piquant sauce. One of our party asked the Russian next to him "Is it tinned crab?" The Russian thought for a moment or two, and then said in his broken English "Yes, it is tinned crab, not Commander Crabb" and roared with laughter at his quip.

Sunday, 26th May

We left Moscow at midnight for Leningrad on the crack sleeping train "Red Star," drawn by a gigantic, lovely steam engine. The cabins were twin-bunked.

The railroad to Leningrad follows the exactly straight line originally drawn by Nicholas I on a map. The one exception is a small loop corresponding to the point where Nicholas had his finger on the rule when he drew the line. It is through forest and marsh with every now and again a village or small town with log cabins and timber houses.

Leningrad is a European rather than a Russian city, unlike Moscow. Peter the Great, who built it, said "It is a window on Europe."

After a short tour of Leningrad we motored out into the country to the Peterhof, the old Royal Palace of the Czars. We saw a few shelled and bombed buildings flaunting their scars in the spring air, monuments preserved by the Russians to remember the German invasion. Peterhof was practically destroyed during the war but has been largely restored outside, and the fountains had just been started for the season. Crowds and picnic parties all over the place. Some of the people in fancy paper hats.

We saw a few small family parties, which in our experience was unusual. You do not see the family parties at the theatre or restaurants that we do in England. There was no litter thrown down by the crowds. Everything was tidy.

In the evening we were entertained at the Marieen-sky Theatre. The ballet was "The Stone Flower." The ballerinas were young and pretty and the scenery

was magnificent. It was a wonderful experience. There is no doubt that Russian ballet is superb.

Monday, 27th May

Visited the Hermitage Art Gallery in the afternoon. Originally the winter palace and hermitage of the Russian royal family, it is a magnificent place with more than 1000 rooms. In a steel-doored strong room we saw a fine collection of gold ornaments and plate and jewellery, some very old, belonging to the fourth century B.C.

Dinner that evening was accompanied by a dance band, and there were some spirited performances. Soon after 11 p.m. we were conducted to the station for the midnight sleeper. On the platform the local management waved goodbye and peals of song livened the parting train.

Tuesday, 28th May

Breakfasted according to our tastes on caviare on bread, cheese on bread or a pork chop on bread, washed down with cognac or tea.

In the late afternoon we had interviews with the Reuter and *Daily Worker* correspondents, the only two British press representatives in Moscow. I also recorded brief impressions of our visit for Moscow Radio.

Mr. Komarov, Deputy Minister of Non-ferrous Metals, had arranged a farewell dinner for us. We were pleased to find that he had invited the Minister of the Chemical Industry and his deputy to it. I thanked Mr. Komarov for asking us over and looking after us so well and said I hoped our mission might help to give a little light to trade and technical collaboration. When I said "a little light" I placed a lighted fountain pen torch in his breast pocket. The gesture was well received, and dinner finished with cordial farewells.

Wednesday, 29th May

Up at 5 a.m. and left the hotel for the airport with a number of our hosts to bid us farewell.

There were no formalities and no customs examination and soon we were off on a Swedish plane to Stockholm. At Stockholm we began to realise again the difference between Russian standards and goods and those of Western Europe. But as one of our Russian hosts said, you must not judge Russian conditions by present-day Western European conditions but from what they were in 1917 and from the way they are improving now.



New departure. A 15-minute television advertising feature by I.C.I. called "Meet the Experts" was seen by viewers in the Midlands, Yorkshire and the North last month. It was the first of a series of seven. This picture shows Jack Hulbert, Aleta Morrison and John Kidd during the filming at Merton Park Studios of one of the programmes. (See also p. 354.)

TV Terylenity. Aleta Morrison strikes a pose for Robert Nesbitt, producer of West End musicals, as Jack Hulbert and John Kidd look on. A scene from one of the "Meet the Experts" series dealing with synthetic fibres. It will be shown on 19th October





New canteen. British Visqueen's new canteen and kitchens, designed to provide meals for the factory's 200 employees, were formally opened by Mrs. N. J. Travis. With her are Mr. Travis (managing director), Mr. J. M. Gillham, Mr. H. B. Challen (architect), Mr. R. Hudson (works committee representative) and Mr. L. P. Mould (works manager)



Relay team triumph. The victorious Ardeer team which won the invitation relay at the Edinburgh Highland Games—Myra Morgan, Marion Brown, Isabel Bond and Mary McCubben

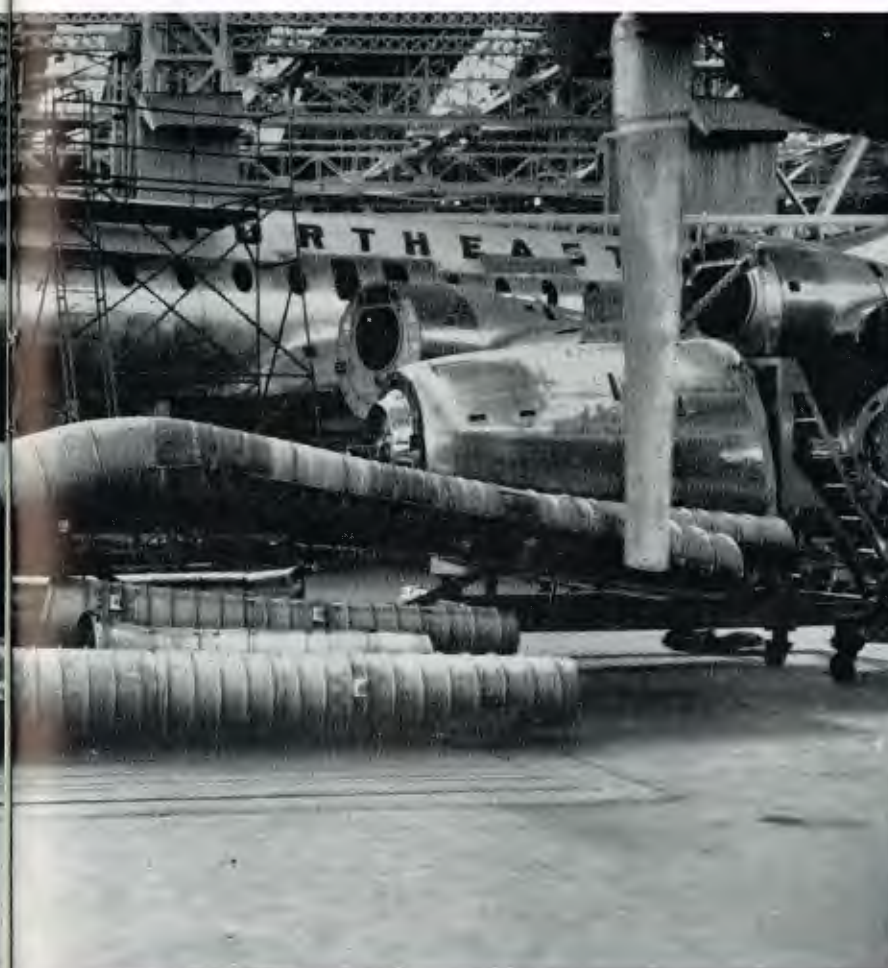


Television quiz at Fleetwood. Alkali Division's Fleetwood works canteen was the location for the ATV quiz programme "Hit the Limit" on 20th August. Here compère Peter Cockburn introduces the first competitor, Bill Minto, of Calcium Cleaners



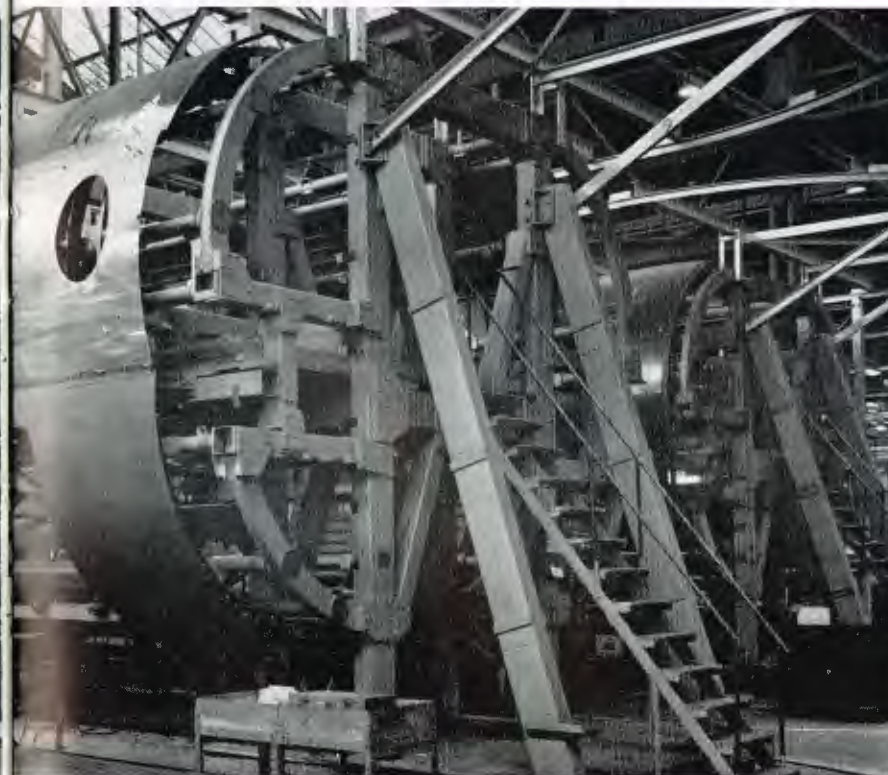
On view at Farnborough. Joseph Lucas (Gas Turbine Equipment) Ltd. are now making exhaust shrouds for the Bristol Britannia in I.C.I. titanium, so achieving a weight saving of about 60 lb. I.C.I. Metals Division

The first Vickers Vanguard under construction at the drawing board by BEA and TCA. I.C.I.'s 'Alocrom' pre the new 'Alocrom' plant

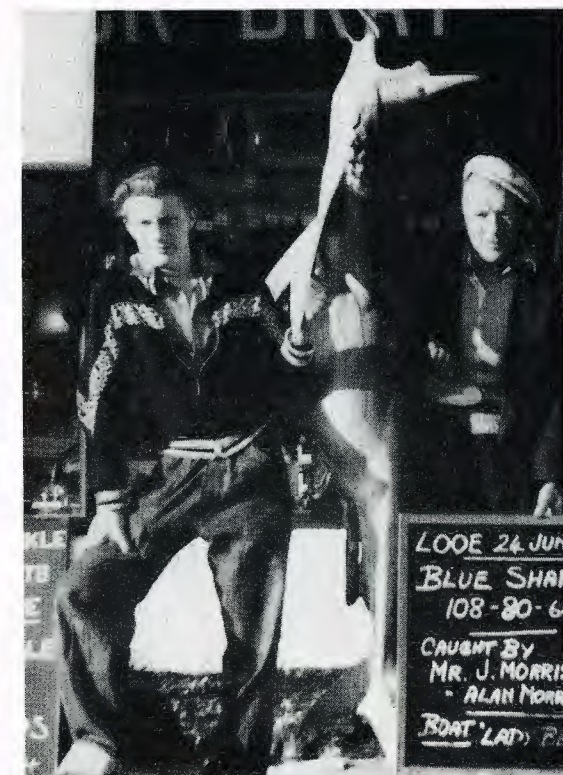


Ltd. are now making exhaust shrouds for the Bristol Britannia in I.C.I. titanium, showed part of a shroud at their stand at the Farnborough Air Show last month

Vickers-Armstrongs works at Weybridge. Already forty have been ordered from the treatment process for aluminium is being used in the production of the Vanguard, and installed at Weybridge is the largest yet in Britain



Pensioners. 89-year-old Walter Barrett and his son photographed at the Chance and Hunt Works pensioners' reunion. Mr. Barrett Snr. completed 40 years' service before he retired in 1933; his son, who is still working at Oldbury although a pensioner, has completed 52 years; and his grandson, employed at Rocksavage laboratory, has completed 26 years



Blackley fishermen. Mr. J. Morrison of Dye-stuffs Division's Blackley Works and his son landed three blue sharks (the largest weighed 108 lb.) while on holiday at Looe in Cornwall, the headquarters of shark angling in Great Britain



Clitheroe catalysts. To satisfy the big demand within I.C.I. and from outside customers for catalysts, a large extension has just been completed at Billingham Division's Clitheroe factory, making it the most up-to-date catalyst factory in the world. This picture shows chargehand R. Singleton setting up a pelleting machine



Royal visitors. The Princess Royal and the Hon. Gerald Lascelles paid an informal visit to Fibres Division headquarters at Harrogate on 30th August. The royal visitors met members of the works council before touring the research and technical service laboratories, engineering workshops and exhibition room. Our photograph shows Miss M. Rhodes, pastrycook in the canteen, being presented to the Princess



Ropes for life saving. Hove in Sussex is the first British seaside resort to install approved Royal Life-saving Society rescue equipment—ten rescue units are planned for Hove's two miles of front. Each unit will be equipped with 'Terylene' rope. Our picture was taken during a demonstration by the Hove police, using the new equipment



Swimming gala. Alkali Division was host for this year's inter-Divisional swimming gala held at Marbury near Winton. General Chemicals won the trophy for the highest aggregate points. Above: Some of the victorious General Chemicals team and their supporters

PICTURES FROM OVERSEAS



Eire. The winners of the Endeavour essay competition photographed with Sir Alexander Fleck (3rd from left), Prof. P. M. S. Blackett, president of the British Association (5th from left), who presented the prizes, and Dr. T. I. Williams, editor of Endeavour (extreme right). The prizegiving was held during the British Association meeting in Dublin last month, at which Sir Alexander was named as president of the Association for 1958



Australia. A television camera at I.C.I.A.N.Z.'s Merrindale Research Station for Australia's first rural TV show. For three-quarters of an hour viewers looked in on the work of the laboratory and heard staff describe their jobs in a series of interviews



Canada. Bill Porter, a technical service representative at C.I.L.'s Edmonton Explosives Works, crossed the continent in his own 65 h.p. plane during two weeks' holiday. Here he prepares for his return trip home from Montreal



Kenya. African labourers at Mombasa unloading A. E. & C.I. explosives from Modderfontein Factory destined for the East African diamond, gold and ore mines. Modderfontein explosives are



sent by rail to Durban and then shipped to Dar es Salaam and Mombasa



Australia. Melbourne's last regular horse cabby, British-born Bill Wright, with his fifty-year-old cab newly reupholstered in red and black 'Vynex,' a P.V.C.-coated fabric manufactured at Deer Park

People and events . . .

AT 5 p.m. on Saturday, 21st September, the first of a series of seven fifteen-minute television advertising features to be presented by I.C.I. went out from the independent television transmitters at Birmingham, Manchester and Leeds. Called "Meet the Experts," it told of the importance of paint in everyday life.

The spectacle of a reputedly austere institution like I.C.I. in association with Jack Hulbert and an attractive girl called Aleta Morrison must have come as a surprise—let's hope a pleasant one—to viewers in the Midlands, Yorkshire and the North. If some of them put down their teacups and pools coupons for a quarter of an hour to see what Aleta Morrison had to do with I.C.I. and what Matt Busby of Manchester United had to do with paint, then the programme was on the way to succeeding.

A fifteen-minute advertising feature of this kind is something that has never been attempted before by an industrial organisation in Britain, and deciding how to shape the I.C.I. programmes must have called for some earnest thought. They not only had to do their job of presenting the I.C.I. story with good taste and tact, but also intrigue and amuse the public without infringing the Independent Television Authority's somewhat baffling rule that such programmes may be entertaining but must not be entertainment.

★ ★ ★

"Meet the Experts" steers the middle course between being informative and being entertaining. Jack Hulbert, Aleta Morrison and John Kidd conduct the proceedings in a light-hearted vein, while each programme will have a guest celebrity (Sir Alan Herbert, marathon champion Jim Peters, Robert Nesbitt, the producer of West End musicals, and Everest climber

Tom Stobart are some who will appear), and an I.C.I. expert who is an authority in the subject dealt with provides the informative content.

Is the mixture successful? The people in I.C.I. who have been responsible for "Meet the Experts" admit that they do not know yet—they have experimented with a new medium for company publicity. The opinion of the average viewer will eventually be winkled out of him by means of complicated surveys and samples. Meanwhile, readers who live in the receiving area are invited to say what they think of the feature.* If they write direct to the *Magazine*, their opinions, no matter what they are, will be forwarded to the proper quarter.

*The remaining six programmes will be transmitted from the I.T.A.'s Birmingham, Manchester and Leeds transmitters at 5 p.m. on Saturdays 19th October, 16th November and 14th December 1957; and 25th January, 15th February, and 15th March, 1958.

Shady Deal

A SUNSHADE for a railway wagon sounds an odd luxury, but that was only one of the things Billingham Commercial Works had to provide for some rail tankers chosen for a through delivery service of butadiene gas from the Billingham Division Olefine Works at Wilton all the way to Italy.

The sunshade was necessary to keep the butadiene cool during journeys



across four countries. Each tank wagon for the job also had to be fitted with specially imported Continental screw-type couplings and air-brake couplings. Other modifications included plates carrying special instructions and warning signs.

The order—from an Italian chemical company making synthetic rubber—was a valuable one, but the problem of getting the butadiene there was considerable. The whole of Europe was searched for a suitable ship, but the only one found was not big enough for the journey. It was too far for road tankers, and Italian rail tankers were too big to pass under the bridges on British railways. The I.C.I. wagons adapted by Commercial Works began deliveries a month ahead of schedule.

Those Shares

THE newspapers were quick to note that the day after some 50,000 I.C.I. employees received shares under the Profit Sharing Scheme there was unusually heavy selling of I.C.I. shares on the Stock Exchange, resulting in a fall in price of 1s. 10½d. to 40s. 6d. This is what they had to say:

Evening Standard. Do workers prefer money to spend, or share certificates? Some of the 115,000 in the mighty Imperial Chemical Industries enterprise gave their answer today. And they preferred cash. Selling of I.C.I. "workers" shares was a highlight of the markets.

Daily Mail. In the market they said the selling followed fresh threats of nationalisation reported from the trade union meetings at Blackpool.

News Chronicle. The whole idea of this profit-sharing scheme was that it should give the workers a feeling of co-ownership and identification with the business of the company. For many of the workers, however, the

bonus is merely regarded as an addition to the weekly pay packet or the monthly cheque.

The Times. The proportion of employees who keep their shares is believed to be very large. Nevertheless, the board might well consider whether there is any way to lessen the impact of employee selling on the market.

The Star. The employees might just as well have been given more money and then those who wanted shares could have bought them like any other thrifty self-reliant person. In this way the capital owned by other people would not have been perpetually watered down.

Frederick Ellis, writing in the *Daily Express*, had the last word: "In case any more I.C.I. workers are thinking of selling, the Ellis advice is *don't*. For I.C.I. is a top-class investment whose shares have more than doubled in value over the last five years."

Next B.A. President

THE British Association for the Advancement of Science has elected SIR ALEXANDER FLECK as its next president. They could hardly have had a better man to preside at their next annual meeting, which is in Glasgow, than one who was born there, began his career in the university as a lab boy and fifty years later received its honorary degree.

The presidency of the British Association is one of the highest honours that science can bestow. The list of presidents since the formation of the Association in 1831 includes nearly all the great names in British science except that of Charles Darwin, whose health would not allow him to take office.

The Association is open to all who are interested in science—no scientific or technical qualification, nor any form of nomination or proposal, is necessary.

★ ★ ★

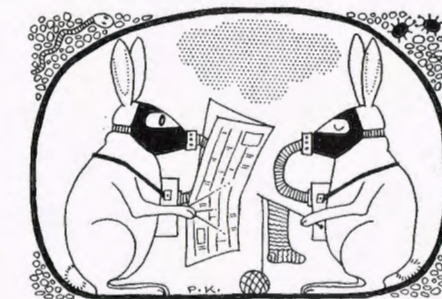
In its early days the Association met opposition that now seems comical in its vehemence. Charles Dickens wrote a series of scurrilous articles about it which purported to deal with the meetings of the "Mudfog Association for the Advancement of Everything."

The Times newspaper for many years refused to print anything about the annual meetings unless it was possible to ridicule them. One president of the Association complained bitterly to Lord Palmerston about *The Times*'s attitude. Palmerston's reply was: "Pooh, pooh! Never mind them. A man who is not *Times*-proof cannot succeed in life!"

Return of the Rabbits

IN the 1955-6 season the keepers at the I.C.I. Game Research Station at Fordingbridge killed only 29 rabbits. Last winter 513 were killed.

This gives some indication of the way the rabbit population of Britain is



increasing again after the big epidemic of myxomatosis.

Another indication of the way things are going in the rabbit world is found in the sales of 'Cymag,' the preparation for gassing rabbits which is made by General Chemicals Division and marketed by Plant Protection Ltd. When myxomatosis was rife, sales dwindled sharply. Now, with the rabbits, they are reviving.

'Cymag' is said to be the most efficient and humane way of killing rabbits. It is spooned or pumped into burrows, which are then sealed with clods of earth. In contact with the moisture of the earth, 'Cymag' evolves poisonous hydrocyanic acid gas, which quickly builds up to a lethal concentration in the burrow.

Atomic Energy Disclosures

ONE night during the war a worker in a forging shop at the Witton factory of Metals Division bet his mates they could not lift the billet of

metal he had been working on. Several of them accepted the bet, for the billet was only 7 in. in diameter and 8 in. long. To their consternation, none of them could raise it even an inch from the floor.

This was not surprising, for the billet was of uranium—a metal of a density far beyond their experience and weighed 200 lb.

Few laymen in those days had even heard of uranium, but at Witton billets of it produced at General Chemicals' Widnes plant were being experimentally rolled, extruded and forged under conditions of secrecy as part of I.C.I.'s contribution to the atomic energy project.

The full story of this contribution has now been told for the first time. Writing in *The New Scientist*, Mr. D. R. Willson of the Atomic Energy Research Establishment gives details of the work done by universities and industry up to 1946.

The Divisions of I.C.I. chiefly involved were General Chemicals, Metals and Billingham. At Widnes Europe's first metallic uranium was made in 1942. Later most of the uranium needed for the Harwell piles was made there.

★ ★ ★

Metals Division, as well as carrying out the fabrication of uranium, successfully carried out the first British trials on sheathing uranium bars with aluminium.

Membrane development was another of their responsibilities. Of this, Mr. Willson writes: "Metals Division soon regarded their target as a disappearing one, since it involved the construction of holes of ever-decreasing size. Each experimental run resulted in a demand for still smaller holes; but LAKE and other members of the Metals Division team pressed on until they finally produced the membrane which is today used in the British diffusion plant at Capenhurst."

Billingham concentrated on engineering research and development for the project. Experimental runs with a small-scale diffusion plant were carried out and experimental sections of a full-scale plant were built. Billingham were

also asked to investigate the production of heavy water on a big scale. They worked out full-scale flowsheets and designs for the process, but the plant was never built because it was decided to use graphite in the British piles.

The names of the I.C.I. people chiefly concerned are mentioned in the article. The author says that the man in charge of the Metals Division work on atomic energy, MR. S. S. SMITH, is "one of the few people who have been continuously associated with atomic energy work practically from its inception up to the present time." Mr. Smith is now Research Manager of Metals Division.

"All the metallurgical work," the article says, "was looked after by a Metals panel, chaired by E. W. COLBECK (then of I.C.I. Northwich) and including SMITH and ALEXANDER of Metals Division, BAXTER and ROBERTS of Widnes. The Widnes work was supervised first by FERGUSON and then by BAXTER."

Dr. Ferguson is now Research Director of I.C.I. and Dr. Baxter is chairman of the Australian Atomic Energy Commission. Dr. Roberts is Deputy Research Manager of General Chemicals Division and Dr. Alexander is on the staff of I.C.I. (New York).

Natives were Friendly

WHEN MRS. MARGARET REDFERN of Amal, the Metals Division subsidiary, was on holiday in New York this summer, who should she meet but MR. BERNARD PHELPS, also of Amal.

Mrs. Redfern spent a crowded month in and around New York visiting relations, some of whom she had not seen for 28 years. Mr. Phelps, a tool storekeeper, ventured further afield. Accompanied by his sister, who settled in America some years ago, he covered 4000 miles by car and visited twelve states in his four weeks. His more off-beat experiences included being chased by a bear and appearing on television.

Now both are back and full of "travellers" tales—Mrs. Redfern dreaming of American kitchens and Mr. Phelps of sunbathing in a temperature of 110 degrees 8000 ft. above sea level at Lake Tahoe in California.

For both of them the outstanding memory of their holiday is of the friendliness and generosity with which they were treated and of the Americans' warm feeling for England.

Nitrogen

IF they were asked what country in the world uses most nitrogenous fertilizer per acre, the majority of people who had given any thought to the matter would say Holland.

They would be wrong. According to recent statistics the right answer is Japan, which is now applying an average of almost 90 lb. of nitrogen per acre of arable land each year. Holland uses about 70 lb. to the acre (including arable and pasture).

These facts are given in a recently published pamphlet "The Use of Fertilizers in the Far East," originally read as a paper to the Fertilizer Society by DR. H. L. RICHARDSON, who is head of



C.A.C.'s overseas department. Country by country and crop by crop, Dr. Richardson discusses the use of fertilizers in an area of the world he knows well: he has travelled widely there, and worked in China for the Chinese Government for about seven years before, during and after the war.

He concludes that, given peace, the Far East might be consuming 2 million tons of nitrogen annually, as against the present 1 million, in less than ten years from now.

It is to be hoped that the increased use of fertilizers in the Far East will not do away with such charming misconceptions as the Malayan proverb which explains why coconut trees thrive when grown near the village, where they receive incidental doses of nitrogen: "The coconut likes the sound of the human voice."

NEWS IN BRIEF

BRAIN AT ARDEER. An electronic computer, to be used initially for wages calculations, is now being installed at Ardeer.

CARELESSNESS. An analysis of 187 accidents which have occurred on Wilton site roads in the last four years shows that 82 were caused by careless driving.

HOT STUFF. Amal Ltd. have produced a new burner for use with high calorific gas such as propane/butane.

LIFE SAVER. A first-aid attendant, Mr. E. Emsley, successfully revived a Gas Board apprentice who had been overcome by fumes at Huddersfield Works.

MONACO DRAMA. Mr. Alexander Thom, of Dyestuffs Division's Grangemouth Works, played the part of Harry when the East Stirlingshire branch of the Scottish Community Drama Association presented Barrie's *Mary Rose* at the Monaco international festival of drama.

BIAZZI HILL. Ardeer's No. 5 (Biazz) Hill went over to the manufacture of nitroglycerine by complete remote control for the first time on 27th August.

WILTON X-RAYS. Wilton Medical Centre's X-ray department was opened by Dr. E. R. A. Merewether, senior medical inspector of the Ministry of Labour.

MERIT AWARDS. Chargehand John Hulse and processman Tommy Selway received meritorious service awards for preventing a breakdown from causing damage to No. 1 compression plant at Heysham.

Captain Jim

As he strolls along the waterfront at Fleetwood for a quiet game of bowls

in the Marine Gardens, Captain Jim Atkinson, who has just retired as senior skipper of Alkali Division's coasting fleet, sometimes pauses to drop a copper in the German mine that is now a collecting box for the Royal National Lifeboat Institution.

That mine means more to him, probably, than to any of the other passers-by who contribute their pennies in this way. The first time he saw it, the mine was floating dark and ominous in the moonlight, perilously close to his ship, which was then just out of Fleetwood



Capt. Atkinson

on a wartime run to North Wales. He had to act quickly to avoid striking it. Later the mine was washed up on the shore and rendered harmless.

Early one morning in 1940 he was not so fortunate. His ship, the s.s. *Calcium*, was mined off Rhyl and immediately started sinking. But Captain Atkinson knew the ship's fireman was still below.

* * *

Followed by the engineer, who had fortunately come up on deck before the explosion, he went down into the boiler room. There they made their way through waist-deep water and clouds of steam to reach the man. When they brought him on deck, however, they found he was already dead.

After the *Calcium*'s crew had been taken off by the s.s. *Sodium*—a sister ship—Captain Atkinson learned that his action had won him the George Medal. He also received the I.C.I. Bravery Award and the Lloyd's Medal.

He was in the news again in 1951, when the *Thorium* sprang a leak off Blackpool and he had to beach her at the mouth of the River Wyre. He and his crew were taken off by the Fleetwood lifeboat.

Magic at Clitheroe

CLITHEROE is the smallest of Billingham Division's external factories, but it plays a big and vital part in the Division's large-scale processes elsewhere and in the making of many products throughout I.C.I.

There is in fact more than a touch of magic about this small factory in the Clitheroe hills. Its products are fascinating coloured pellets and powders called catalysts, which in relatively small quantities make possible many chemical processes. Furthermore, though there are theories, nobody is absolutely sure just how these catalysts work. The catalyst itself does not change, though it changes the substances which are put over it.

Propylene and water, for instance, in all ordinary circumstances stay separate: but under pressure and heat, and put over a bed of metallic oxide catalyst, they join to make isopropanol, an important chemical needed to make 'Perspex.'

As well as becoming more and more important to the Company, however, Clitheroe's catalysts have been finding increasing markets in other British companies and overseas. For these

reasons it was decided largely to rebuild the Clitheroe factory, modernising all sections and doubling its capacity.

Now this virtually new factory is in full operation—the most up-to-date catalyst factory in the world. The largest single market for catalysts is the U.S.A., and an expanding dollar export business is expected.

NEW APPOINTMENTS

Some recent appointments in I.C.I. are:

Dyestuffs Division

Mr. D. Allan. Overseas Technical Manager.

Mr. J. Thompson. Labour Officer, Trafford Park Works.

Head Office

Dr. C. M. Scott. Head of Industrial Hygiene Research Labs.

Metals Division

Mr. W. G. Morgan. Chief Fire Officer and C. D. Instructor.

Scottish Agricultural Industries

Mr. E. P. Hudson. Managing Director.

The Regions

Dr. J. P. Dickson. Deputy Manager, Southern Region.

Mr. W. J. B. Lee. Sales Manager (Dyestuffs), Northern Region.

Mr. R. R. Veitch. Sales Manager (Dyestuffs), Southern Region.

FIGHT AGAINST DISEASE (continued from page 331)

high-pressure work, work involving large quantities of toxic gases, or work with radioactive isotopes.

The biological laboratories, on the other hand, possess many uncommon features. They are arranged in suites of three rooms. In each a central utility and study area is flanked by two laboratories. Some utility areas have sterile cubicles elaborately equipped with bacteriologically filtered air and ultra-violet light, others have photographic darkrooms, others have electrostatically screened rooms.

The key to all design has been flexibility. Laboratory furniture, instead of being fixed, can be moved at will to suit the needs of the individual worker. The services in each laboratory—electricity, gas, vacuum, air, water, drainage and steam—are not only repeated at five-foot intervals along the dividing walls but can also be tapped at two points in the centre of the floor. On one wall there are also outlets for cylinder gases, but there is no necessity to trundle the cylinders into the laboratory—they are housed, and connected, from cupboards outside in the corridors.

A particular feature of interest is the windows. If these were to open, the whole scheme of controlled sterilised ventilation would be defeated. Nevertheless it is necessary to cope with changes of outdoor temperature. The windows are therefore double, and the outer window can be opened. The inner window is a single sheet of plate glass,

permanently fixed, and between the two there is a heating coil and a remotely controlled venetian blind.

Finally, centrally placed among the laboratory blocks, is the wash-up unit. Here is received all used laboratory glassware for sterilisation, washing, storing and re-issue. This is a big-scale operation, and the layout ensures that infectious glassware and non-infectious glassware never come into contact at any stage whatever. In this building, also, is the "kitchen" which produces the medium on which most types of cultures will grow—and the basis of it is the most delicious beefsteak broth!

According to modern estimates, the Great Plague of 1664 killed off, in three months, one person in every seven of the population of London. While our history emphasises this disaster—because it happened on our own doorstep—it often neglects to point out that it was but part of a pattern of serious epidemics which waxed and waned over Europe for centuries. The answer to such epidemics has been sanitation—in other words, control of dirt. The basic work in this respect was done by our forefathers.

But there is a whole group of diseases, both infectious and non-infectious, whose control has nothing to do with this approach. This is the field which the research of Pharmaceuticals Division has been tackling since 1936, with considerable success. Already the sting has been taken out of malaria, pneumonia, leprosy and venereal disease. There will be more successes to come.



By J. R. Graham

THE tropical night sky was brilliant with sparkling stars. The leaves on the palm tree over my head moved gently on the balmy evening breeze, and all was peaceful. This was the hour to relax after the hard day's toil, but for me there was no relaxation. Now was the time for contentment, but in me there was no happiness. My mind was in a turmoil, and presently, out of the turmoil, there appeared to crystallise a man. An inner man of myself, who spoke to me harshly and compelled me to be silent and listen.

"What," he asked me, "is the use? Where does it get you? Five thousand miles from Home, sweltering in the tropical heat of an Eastern land. Temper getting shorter and spirits sinking lower as the months go past. Over a year, more than twelve months, four hundred and ten days to be precise, until you get out of it—until you go on leave.

"Leave! All your thoughts circle round it. For three long years you wish your tour were over, you wish your life away. Praying, in effect, that you will grow old quickly—so that you may savour the sooner the joys of those six brief months at Home. And then back to the same old thing. Three years wishing and six months living. Until you are forty, then you live rather more often. Five months every two and a half years! Until you are fifty—then you retire.

"You retire! You are free to live all the time! But you can't. After years in the East you have developed expen-

sive tastes, but on your pension you can't afford to indulge them. And you find yourself surrounded by people who all have their circle of friends, but not you. You have made a lot of acquaintances, but no friends. Anyway, none to turn to now. Not since Bill Stopford and Jack Walker went their various ways. Since Bill died of a burst appendix in a squalid rest house miles from anywhere and Jack went native with a woman from the hills.

"All right, so that's only what may happen. There are twenty years before you retire, and for you things could be different. Meantime you've got your servants, your car, your tennis at the club, your spacious modern flat—and your overseas pay and allowances. You have a selection of drinks in the cupboard and a seaside hut to go to at weekends. You live a sophisticated life; dinner jacket once, twice or more a week and pink gins before tiffin on Sunday. You have a young family. Fine; you also have a nanny to look after it. And when you go on leave, that leave which enters into every calculation, you're rich. Or comparatively rich, anyway. In contrast with your opposite numbers in London, on Home pay and no allowances, you have money to burn—and time as well.

"What's that you say? You found last time you were Home that even leave could disappoint and not be the care-free bliss you expected? You have to visit in-laws in Cardiff, a maiden aunt in Aberdeen, a factory in Newcastle

and a grandmother in Torquay. Large slices of your precious time and hard-earned money are frittered away on travelling and hotels. You meet the people you particularly want to meet, your old friends. But here is the biggest disappointment of all. You find that after your years abroad you have grown apart, you have lost your common interests. All this can only mean one thing, and with this thought I leave you. You are unhappy away, and the doors are closing against you at Home. You cannot have your mind in the one place and your being in the other. They must be brought together, somewhere. You must choose, once and for all, where that will be."

And so saying the man from my mind took his leave of me. For a long time I sat in silence, caressed by the warm night air. Then suddenly my depression was lifted from me. I leaped from my chair and ran from the garden singing with joy. My decision was made.

It was high noon, but all was dark and gloomy. The winter sky was grey and menacing. A cold wind from the north carried in its icy fingers the first snowflakes of the year. The usually busy streets were innocent of people; this was no time to be out of doors. But the cheerless scene was nothing to the chilly greyness within me, and I did not hurry towards my home. I walked slowly, shoulders bent and hands deep in my overcoat pockets. Through my head ran the many facets of a mental conflict. I turned them over in my mind. Faster and faster they spun until—as though in a flash—there appeared a man. The man who was my inner self had come back to speak, and as before he compelled me to listen in silence.

"So you stayed at Home!" he said. "You made your decision and left the East. For two years you have lived in your own country among your own people. For two years your passport has lain undisturbed on a shelf in your Kensington basement. No servants to irritate you and demand bazaar money when your funds are dry. No boredom from seeing the same faces day after day in the same club. You can go on a bus when you like and do all the other simple things you want to. You can buy your own vegetables and groceries, and convention does not demand your having the most expensive cinema seats.

"Oh yes, you have to pay more income tax, but at least you feel you have a say in the government which collects it. You don't have a shiny new car, but you have paid off the instalments on one full of pre-war character. You don't have to tolerate the prohibitions and censorship of a foreign land. The licensing laws and whims of the Lord Chancellor which take their place may be even more inexplicable, but to you they are amusingly irrational, typically British. Instead of the endless blue skies, boiling sun and choking dust of the East you have the changing English seasons, the fresh green of the countryside and the singing of birds in the trees. You haven't a nanny? No, but neither do you

have the problems of sending the children Home to school, of arranging somewhere for their holidays, of a divided family life.

"You are aware that you should count yourself lucky, and you are worried because you don't. You have all the things you missed so much when in the East. You have found the life you said you wanted, the life which cast its irresistible attraction over the oceans and drew you Home. And yet you are still unsettled and unhappy. Why? You cannot answer that, but I shall tell you: it is because things are never as they seem. Distance lends enchantment to the lush green sward of the meadow. It hides from your gaze the cruel thistles among the grass and the sharp stones which hurt the feet that trample on the soft, inviting growth. And now you have found thistles and stones, even in your own fair land. Perhaps the ones you left behind on those Eastern plains were the less prickly and uncomfortable after all.

"The servants irritated you, but you did have servants. The heat wore you down, but you did have the cheer of blue skies. Today your wife is drab with household chores. Your holiday is only two weeks a year—six weeks in three years. Time was when after three years you would have had six months. Perhaps it was a nuisance making a few family calls, but you could at least make them. Now the nearest you ever get to your relatives and many of your friends is an exchange of Christmas cards.

"So the old discontent threatens to overwhelm you. You feel you are back where you started. But take hope; you are learning. That is why you came Home; you learned that with your mind and body in different places you could not be happy. There is, though, one more lesson you have to learn, and it is really the converse of the other one. You have to learn that wherever you go you will always have one unavoidable companion—yourself. So you must settle down now to living at peace with yourself.

"How you settle doesn't matter. It may be to a regular routine of catching the same bus to work every day for the rest of your life, or it may be wandering the continents of the earth. What does matter is to stop this inner struggle which comes from comparing the things which irk you in the life you are leading with the outward-appearing joys of some life you imagine could be yours elsewhere. Remember that you in that other life would still be you. Accept that, and all will be so much easier. Only you can decide—so once more I leave you to make your decision."

And so he left me. The clouds in my mind vanished with him and by contrast I became aware for the first time of the snow and the cold around me. As I hurried home I saw my way clear before me. I had reached my decision and was happy. I hastened to my flat, and taking up my pen started to write. I wrote down all that had been said to me, so that I would forget none of those words of comfort. I wrote this.



"London Artist"

Photo by A. Walker (Billingham Division)